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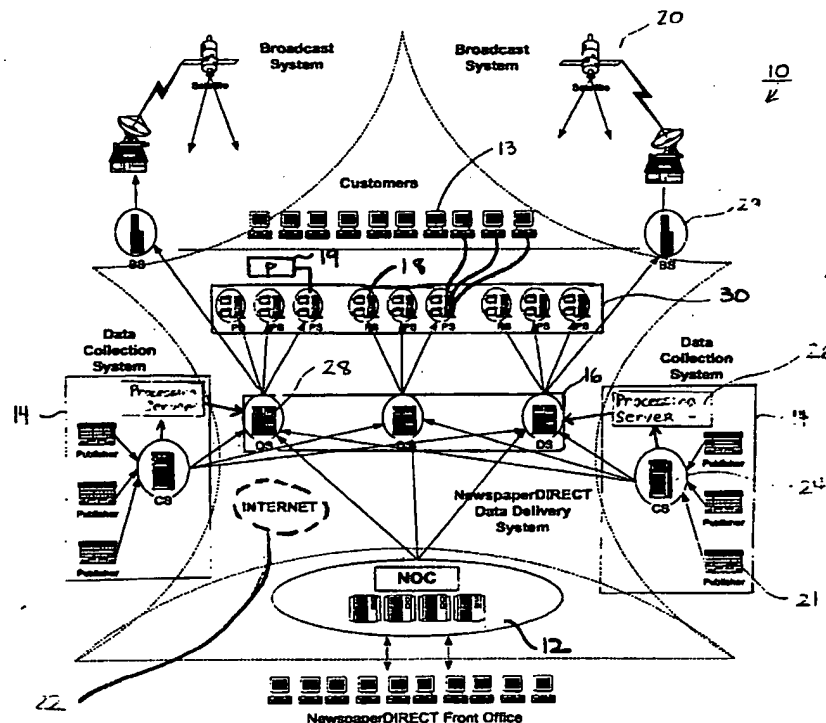
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(54) Title: SYSTEM AND METHOD FOR ORDERING NEWSPAPERS ELECTRONICALLY



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(57) Abrégé/Abstract

A system and method for creating a network of computer devices to facilitate the operation of an information distribution system. The system comprises a network operating center, a data collection system, a data distribution system, and a client installation. Data collected from publishers is distributed to client installations depending on orders placed. The system is configured so as to provide a communication platform that is centrally managed and controlled. The system further includes a monitoring system for tracking the flow of information and a database for the archiving of data.



## ABSTRACT

5 A system and method for creating a network of computer devices to facilitate the operation of an information distribution system. The system comprises a network operating center, a data collection system, a data distribution system, and a client installation. Data collected from publishers is distributed to client installations depending on orders placed. The system is configured so as to provide a communication platform that is centrally managed and controlled. The system further includes a monitoring system for tracking the flow of information and a database for the archiving of data.

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# SYSTEM AND METHOD FOR ORDERING NEWSPAPERS

## BACKGROUND OF THE INVENTION

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### 1. FIELD OF THE INVENTION

The invention relates to a system and method of providing an information distribution system, and more specifically to the application of computer devices for the networking, retrieval, distribution, and publishing of materials such as newspapers, magazines and the like.

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### 2. DESCRIPTION OF THE PRIOR ART

The daily newspaper is the single most frequently purchased product or service in the world. Nearly 500 million newspapers are bought each day around the world. From the time of Gutenberg's press, the importance of newspapers as the medium of debate, and an historical record of social and political life, has endured. The last ten years have arguably been the biggest challenge to the institution of the printed newspaper. With the challenge being brought about by emerging technology, some are predicting the demise of the newspaper as a medium, others believe that newspapers (as content) will survive or even prosper in the Internet age.

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Each individual subscriber, is at present, delivered a printed newspaper to their individual residences in either the morning or the evening by delivery persons. These newspapers are printed by publishing companies and are manually distributed. The present system for the publication of newspapers and magazines in the paper form has a plurality of associated problems or difficulties. For example, the cost of printing and distribution using the present system tends to be quite high. As the cost of labor and materials increases there is a commiserate increase in the cost of printing and delivering each individual newspaper. In addition, in this day and age there is an increase in environmental awareness. While recycling of newsprint is common place, the monetary cost associated with the disposal of used newsprint and the like is increasing. Despite the advent of recycling, a large portion of newspapers still continue to be deposited in landfills. The paper waste generated by the newspaper industry is particularly high,

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especially considering the average person reads only 10% to 20% of the paper. There is also an issue of time constraints in that, for each newspaper run the paper must typically be set by 8 p.m. of the preceding day. A further issue for consumers is reading a newspaper, on a commute to work, and having to deal with the issue of ink ruboff.

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From a publishing perspective, even before emergence of the Internet, publishers have struggled with adopting technological improvements from the standpoint of business operations. To be competitive in today's marketplace, publishers must be on the forefront, taking advantage of the productivity improvements technology can bring to the business processes. To a large extent, this is a consequence of geography placing significant constraints on competition among daily newspapers limiting competition to two or three competitors in most markets. This includes using technology in our aspects of publishing, including editorial, advertising, production, and distribution.

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Many methods for an improved distribution and publication system of materials such as newspapers have been introduced. Publishers of daily newspapers have established their online websites however few of the websites of daily newspapers are profitable today. The current challenge for publishers is how to exploit technology aggressively as a means of improving business operations. This includes using technology in all aspects of publishing, including editorial, advertising, production, and distribution. While this new network and method for a paperless distribution system has overcome some of the previously existing problems, there is a new emergence of network and computer related hurdles.

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Several methods for the wireless publication of materials are known in the field. For example, United States Patent No. 5,689,648 teaches a portable viewing screen coupled to a microprocessor such that one or more additions of periodicals maybe viewed. Transmitted data is provided to a cable television satellite receiving station by way of a satellite link. Signal generators provide signals to a cable network transmission facility, this facility transmits these signals over the cable line to a plurality of subscribers.

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A further example of a data transmission system is described in United States Patent No. 5,708,960. This patent utilizes radio broadcasting as a means to dispatch information directly into individual homes. The system involves the collaboration of a plurality of local offices with a central office and combines national news with local news to result in a unique collaboration of newspaper data that is broadcast from a local office and received by a terminal office which is generally installed in the home of each subscriber. Each terminal office is specially configured with a plurality of components such that the data maybe received in a readable format.

A third paperless publication system is described in United States Patent No. 5,768,517 which teaches a plurality of interfaced local and remote stations so as to enable users to retrieve ordered publications. At each of the local stations, information is accessed by subscribers through dedicated user stations. The system further includes a verification system in order to authorize access to ordered publications. This patent further describes in detail the transmission of a signal and its related processing. The paperless network described in this patent includes a plurality of remote stations, local stations, and user stations.

In each of the prior art documents a series of steps is followed in order for data to be received by the end subscriber. Each of these steps is dependent upon the previous. Further, each of the prior art documents focuses on the transmission and receipt of data. The process terminates once the document reaches the terminal device where the subscriber may then either directly access or password access the data for which they have subscribed.

It is an object of the present invention of obviate and mitigate at least some of aforementioned disadvantages of the prior art.

## SUMMARY OF THE INVENTION

In general terms, the present invention establishes a system and method for creating a network of computer devices to facilitate the operation of an information distribution system. The system comprises a network operating centre having a multi tiered architecture, a data collection system,

a data distribution system, a client installation, a billing and reporting system and a content management system. Each of the previously mentioned systems interfaces with network operating centre such that the system is centrally controlled and operated. The system collects, processes, and distributes electronic information, such as a newspaper or the like, over a secure network.

In the preferred embodiment, the system is intended to be a web based tool such that the system provides a communication platform capable of broadcasting large volumes of electronic data while being centrally managed and controlled. The system is designed such that it is multi tiered in order to provide the redundancy and fault tolerance for each of the services provided.

The client installation includes a print station and a computer device which is controlled and monitored from the network operating centre. It is configured such that it is a "print-on-demand" installation. Data is collected from various publishers and is distributed to any of a plurality of client installations dependent on demands placed. These demands are monitored by the billing and reporting system which details each transaction performed by the client installation system. The content management system serves as a data store for information pertaining to the system.

## BRIEF DESCRIPTION OF THE DRAWINGS

These and other features of the preferred embodiments of the invention will become more apparent in the following detailed description in which reference is made to the appended drawings wherein:

**Figure 1** is a schematic diagram of the system;

**Figure 2** is a functional block diagram detailing the method effecting the transfer of information in the computer system of Figure 1;

**Figure 3** is a schematic diagram of an expanded view of the system of Figure 1; and

**Figure 4** is a functional block diagram detailing the method of processing and transferring information in the computer system of Figure 1.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

5           A computer system for establishing a network of computer devices to form an information distribution system is illustrated in Figures 1 through 3 and generally designated by reference numeral 10.

10           The system 10 has a multi-tiered architecture and comprises a network operating centre (NOC) 12 that communicates with a data distribution system 16. The data distribution system 16 receives collections of data from data collection systems 14 and distributes the collections to, selected ones of a plurality of client installations 18. Each of the client installations 18 may either produce printed copies of the data collections, as indicated at 19, for manual distribution or may forward it electronically to individual customers 13 of the client. The system will be  
15           exemplified by a service to provide personalized newspapers, as the data collections, to hotels, constituting the client installations, for delivery to their guests, the customers 13.

            The distribution of the information between the components of the system 10 will typically be accomplished over a public network such as the Internet 22 as indicated by chain dot  
20           line 22. Alternatively, where a reliable Internet connection is not available, a broadcast system 20 may be used which typically includes a satellite and broadcast server 29 communicating with the distribution system 16. Each of the distribution links may be secured to inhibit interception and amendment of the data collections.

25           The data collection system 14 as shown in Figure 1, comprises a plurality of servers so as to efficiently compile large data files from a series of widely distributed sources. Typical data collected from publishers 21 is received in the file format of Adobe Acrobat or Post-script files, such files being sent through secure channels. The plurality of servers within the data collection system facilitate processing efficiency and overall scalability of the network. Having multiple  
30           servers also enables a decrease in system traffic at individual servers. Each collection server 24

acts as a concentrator and enables publishers to deposit image data content files at a single server. Once data is received, it is sent to the distribution system. The collection servers 24 interact with a plurality of processing servers 26, as described in Figure 4, such that the final stop in the collection system involves an operator review of the processed file to ensure the file is in the desired user-friendly format. The entire collection system 14 is centrally managed and monitored by the network operating centre 12. The collection system acts as a "concentrator" for all data files.

Once processed, files are sent to the data distribution system which comprises a plurality of servers 28 that employ a data delivery platform to facilitate the redistribution of the collected data from the collection servers 24. Once data has been processed and manipulated by the processing servers of the data collection system 14, that data is automatically transferred to the distribution system 16. Various data delivery mechanisms are employed and in the preferred embodiment these mechanisms include point-to-point FTP delivery as well as push channels. Push channels ensure such that the data is automatically sent from the distribution server 28 to the client installation 18. Further, in the event that a broadcast system 20 is employed by the framework 10, satellite data broadcast methods are employed as a means to transfer data to the collection system 16. Each of the distribution servers 28 is delivered the processed and refined data files such that any distribution server 28 is capable of providing data to a client installation 18. Distribution servers 28 are located throughout different countries such that the load and traffic on the data distribution system 16 is spread and that the system 10 provides scalability. The distribution of the data is centrally controlled from the network operating centre 12 such that a continuous monitoring system runs in the background and tracks performance.

An overview of the method of establishing an information distribution system is detailed in Figure 2. A publisher 21 creates a data file 102 which it uses for the production of the newspaper through a conventional printing and distribution process. The data file 102 is also sent to the collection system typically using a secure content upload and download configuration using protocols such as HTTP, FTP and local file copying and stored as a collection server 24 at the collection system 14. The data collection server 24 at the location nearest the publisher is the



most common recipient. The data is processed and as more fully explained below with respect to Figure 4 and refined as indicated at 106 (or do we insert bold here) such that the contents are tailored to meet distribution and quality standards. On completion of the data processing, a file is sent as indicated at 108 to the distribution system 16. The data distribution system 16  
 5 receives orders from an order placement system 110 and data, based on an order placement system 110, to a client installation 112. The order is downloaded by a client installation 18 and sent to the appropriate customer 13 either electronically or by printing and manual distribution. Once an order is downloaded to the client installation 18, that data is archived (116) so as to be available for future use and analysis. The data is temporarily archived at the client installation  
 10 18 and subsequently saved at the NOC 12. The order placement process 110 is centrally monitored and managed by the network operating centre 12.

The collection and processing of electronic data by the system 10 is outlined in Figure 4. For data to be received from a publisher 21, the system 10 connects to a publisher server 202.  
 15 The NOC 12 initiates a download and employs an issue profile to determine the schedule, publisher directory and file names to be downloaded to one of a plurality of collection servers 24. The collection server 24 generally receives each page of data as a single file. In the case of multiple files, the server 24 sorts the files by name and places them in page order as indicated at 206. The first file is opened and remaining files are inserted therein so as to create a single file  
 20 204. Once the download is complete, the server 24 compares at 208 both the file date and size of the downloaded material to that on the publisher server to assess completeness. In the event the file sizes are unequal, the server 24 resumes the downloading. Once complete, these files are sent to one of a plurality of processing servers 26.

25 Publisher files are typically an electronic version of a printed newspaper and generally require a large volume of memory space. As such they contain special marks, including embedded fonts, color breaks and bitmap based images. Each page of data is configured individually. Processing server 26 facilitates the simplification and downsizing of data received by the collection server 24 so as to allow for reproduction of the data at a client installation 18.  
 30 When a file arrives at a processing server 26, a set of instructions is invoked by the system 10 for

the assemblage of the data. The file is then cropped 210 to remove special marks used by a typical publishing press and unnecessary margins from each page. In the preferred embodiment, the Acrobat Crop tool is employed to remove these special marks either manually or automatically. The system 10 facilitates a cross-check mechanism to ensure the crop attributes  
5 are acceptable and meet quality standards. The data file is then distilled 212 to optimize its contents. Generally this process includes the conversion of the original file, often in pdf format containing high resolution pictures, non-standardized fonts etc. to a postscript file format that requires less memory and has a smaller byte size.

10 Once the distillation process is complete, the final file 214 is sent to a directory at the NOC 12, where an operator reviews the file contents to ensure quality standards are met.

The file, when approved, is sent as indicated at 216 to the distribution system 16 and the processing is complete. Each distribution server 28 within the distribution system 16 has the  
15 processed version of each data file sent from a publisher. This enables a client installation 18 to retrieve data to fill an order from any one of the plurality of distribution servers 28. Further, the data content being present on all distribution servers 28 increases the fault tolerance of the system 10 such that a mechanical breakdown of a single server will not affect the system's ability to process and deliver an order in a timely manner.

20 The Network Operating Centre 12 is intended to provide both redundancy and fault tolerance for each of the interfaced system components. In the preferred embodiment, the network operating centre 12 is divided into two main tiers, a front end and a back end. The front end provides core data distribution services. Front end servers are run in parallel under  
25 supervision of a load balancing service so as to balance and distribute component interfaces over a plurality of servers. Using a two-tiered architecture enables the scaling of front end resources, such as TCP/IP, with increased system redundancy. By distributing and balancing components utilizing front end resource, a failure of a single server is overcome by redistributing the load. The back end is a data services layer and provides both data storage and data base services. In

the preferred embodiment, data storage is provided by a file share service having fail-over capability, and Microsoft SQL server 7.0 providing data base services.

5       The client installation 18 serves a dual purpose in that it is both a product delivery mechanism and an order collection point. The client installation 18 is configured to receive both client order details and, in turn, data files, to fill the orders. Data is sent from the distribution system 16, in the form of parameterized print jobs from various sources, to the client installation 18. These print jobs are created on the basis of orders placed by clients/customers. The client installation 18 comprises a printing mechanism 19 and/or a personal computer 13 (PC) with  
10       monitor. The PC polls the distribution server 28 searching for a particular order, or, in the alternative, the distribution server automatically pushes specific order data to a client installation.

      The file delivered from the distribution system 16 to the client installation 18 to fulfill and order placed by a customer 13 may carry specific instructions such as paper color and size.  
15       If the file is to be printed, it enables the printer 19 that prints the file with the custom information. Once the print job is completed, the product is delivered manually to the customer.

      The client installation 18 tracks orders, production data and supply consumption and  
20       sends this information to the billing and reporting system 32 of the network operating centre 12. The client installation 18 is centrally controlled by the network operating centre 12 such that local and remote monitoring of print job status, printer subsystems, communication channels and supply consumption is performed by the NOC. For example, an operator monitors printer status such that the NOC 12 is aware of a particular print station of a client installation being out of  
25       paper or requiring service. This type of monitoring, in the preferred embodiment, is a window-based customer interface that allows for the local control of certain functions of a client installation within the network operating centre 12. The monitoring system, run by the NOC 12, sets off an alarm as a means to notify an operator at the client installation of a problem e.g.: paper jam, low toner, out of paper. If the problem remains unnoticed by personnel local to the

client installation, the NOC will use other communication to notify such personnel of the problem such that it may be rectified in a timely manner.

Each client installation 18 includes a point of subscription system which enables a third party to enter order information into the client installation 18. The order is in turn processed, such that the content is relayed to a downloading and management system within the client installation 18. Once an order is downloaded, it generates an invoice 40, which in turn is gathered by the billing and reporting component of the network operating centre 12.

In the preferred embodiment illustrated in Figure 3, the network operating centre 12 further includes a billing and reporting system 32 and a content management system 34. The integration of the billing and reporting system 32 enables the system 10 to provide processing for financial transactions between participants of the system, as well as, collect daily control data from client installations 18, collection servers 24 and distribution servers 28. The data collected is uploaded into a billing data base and that data is in turn filtered to provide relevant information to the billing system. The billing system includes a daily reporting procedure 38 that produces information pertaining to daily sales, daily payments, credit batch reports, detailed monthly statements and overdue commissions. The billing system maintains a log such that it tracks and records a record of all orders placed and interfaces with a content management system.

The content management system (CMS) 34 traces the flow of information, such that it interfaces with the collection system 14 and distribution system 16. In the preferred embodiment, the CMS 34 initiates the collection system 14 by scheduling a collection of data from the publisher 21. Once the data collection is complete, the CMS creates a processing job and sends the downloaded file to a processing server 26. The processing server 26 once completing the job, notifies the CMS 34. An operator at the NOC is alerted and the file is reviewed. Once approved, the CMS saves a copy of the file to a database and publishes the file on the distribution system 16. The CMS 34 further facilitates the archiving of collected data such that it stores and organizes files in a catalogued manner for future analysis of archived data. This management system incorporates a mechanism for a plurality of searching tools such that

past data collected is easily sorted and retrieved and further enables customers to search data previously processed by the system 10. The database further contains content profiles, publisher profiles, distributor profiles, guest profiles etc.

5       The point subscription system of the client installation 18 enables an operator at the hotel secure access to the system 10. An order entered into the system typically includes fields such as guest name and room, subscription start and stop dates, etc. Further, the subscriber will have a plurality of newspapers from which to choose. This may be included at the time of registration of the guest and integrated with the guest record interface. In addition, the system facilitates the  
10 continuation of a guest's home subscription, if that subscription is a subscriber to the system 10, to be transferred to the hotel for the duration of a guest's stay. Once the order is input, the subscription system synchronizes with the content management system 34 of the NOC 12, which facilitates the downloading from a distribution server to begin progress. An operator may query the system at any time to ascertain the status of a particular order. The system returns one of a  
15 plurality of options stating that:

- a) the issue is not yet available;
- b) the printer has an existing copy of the order on its drive meaning the issue has already been downloaded;
- 20 c) the subscription for a particular hotel guest has been ordered in advance; or
- d) the issue is currently being downloaded.

Once the downloading process is completed from the distribution system 16 to the client installation 18, customized copies are created at the client installation and sent to the printer such  
25 that the particular issue is distributed to a hotel guest. The subscription data is used to supplement the filed delivered from the distribution system so that customized print orders are produced.

The client installation 18 further indicates what stage the printing process is at. When  
30 querying a printer, to surmise if a particular order has been printed, the system is color-coded to

indicate that the job has been printed, is ready to print but waiting for processing by a printer, or the operator has cancelled the job. The billing and reporting system interacts with the subscription system such that a particular order may be billed once it is completed and the billing system updated. The CMS 34 updates issue status, its location in the system 10, billing  
5 completed etc.

Accordingly, the system may deliver an accurate reproduction of a customers usual newspaper even if not normally available and permit that newspaper to be customized for the particular customer.

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Although the invention has been described with reference to certain specific embodiments, various modifications thereof will be apparent to those skilled in the art without departing from the spirit and scope of the invention as outlined in the claims appended hereto.

**THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:**

1. A method of establishing an information distribution system over a public network, the method comprising the steps of:
  - (a) a publisher sending electronic data to a collection system;
  - (b) said collection system processing said data;
  - (c) distributing said data through a distribution system; and
  - (d) a client installation receiving said data on an order based system;

wherein said system is centrally managed by a network operating centre (NOC) having a datastore to enable performance monitoring, data tracking and provide a record of transactions; and

whereby each of said systems has at least one interface with said NOC.
2. The method of establishing an information distribution system of claim 1, wherein said NOC further includes a billing and reporting system so as to provide a means for tracking and processing orders.
3. The method of establishing an information distribution system of claims 1 and 2, wherein said NOC further includes a content management system the flow of information track between system component, and having a database for archiving data.
4. The method of establishing an information distribution system of claim 3, wherein said content management system incorporates a searching tool for the assembling and delivery of data content upon request.
5. The method of establishing an information distribution of claim 3, wherein said monitoring system includes an alarm feature as a means of notification for system problems.

6. The method of establishing an information distribution of claim 1, wherein said distribution system comprises a plurality of distribution servers having a data delivery platform for the transfer and downloading of data to a client installation.
7. The method of establishing an information distribution of claim 1, wherein the client installation comprises a printing mechanism and a computer.
8. The method of establishing an information distribution of claim 7, wherein said client installation polls said distribution system for the presence of an order.
9. The method of establishing an information distribution of claim 7, wherein said distribution system pushes an order to said client installation.
10. The method of establishing an information distribution of claim 1, wherein said client installation system further includes a subscription system for the entering of order information, and wherein said subscription system interfaces with the filing and reporting system of the network operating centre.
11. The method of establishing an information distribution of claim 1, wherein said monitoring of said client installation by said NOC details print job statuses, printer subsystems, communication channels and supply consumption.
12. The method of establishing an information distribution of claim 1, wherein said client installation serves as a product delivery mechanism and an order collection point.
13. The method of establishing an information distribution of claim 2, wherein said billing and reporting system includes a log so as to track and record details of orders placed.



14. The method of establishing an information distribution of claim 1, wherein said system is intended to use in a hotel.
15. The method of establishing an information distribution of claim 14, wherein said system enables a particular home subscription to be transferred to a hotel for the duration of a guest's stay.
16. The method of establishing an information distribution of claim 1, wherein said system further includes a broadcast system for the sending of said publisher data to a collection system.
17. The method of establishing an information distribution of claim 1, wherein said processing of said data includes the removal of special marks from data sent by a publisher for the reproduction of data by said system.
18. A method of establishing an information distribution system for the order and delivery of a newspaper to a customer at a hotel over a public network, the method comprising the steps of:
  - a) a customer placing an order for a newspaper selected from a list of available newspaper;
  - b) entering order details to a client installation at the hotel;
  - c) connecting of said client installation with a collection and distribution system having newspaper data sent from publishers;
  - d) downloading data corresponding to said order to said client installation; and
  - e) delivery of said order to said customer;

wherein said collection and distribution system processes said newspaper data received from said publisher to remove special marks;

wherein said client installation serves as an order collection point and a order delivery mechanism.

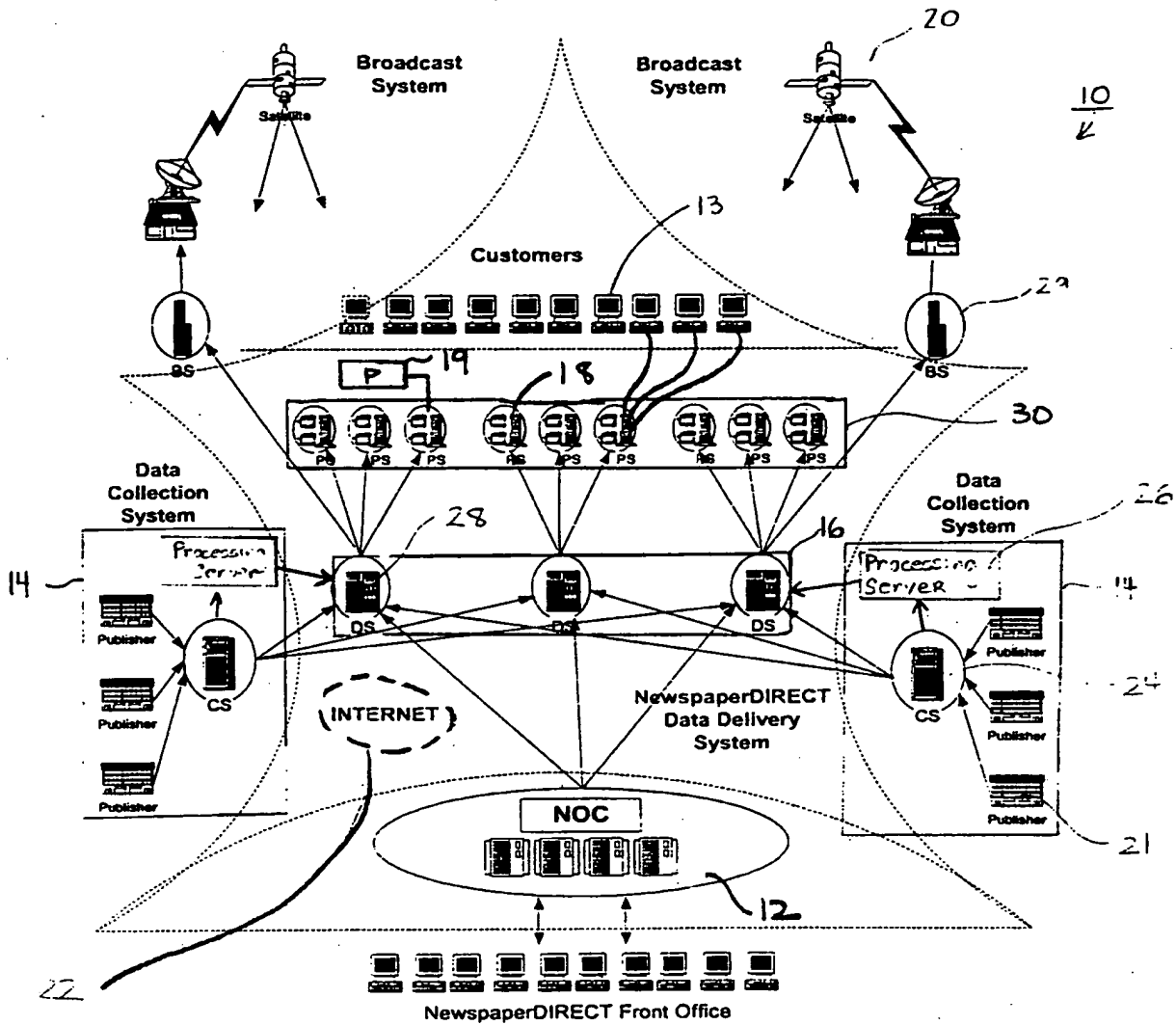
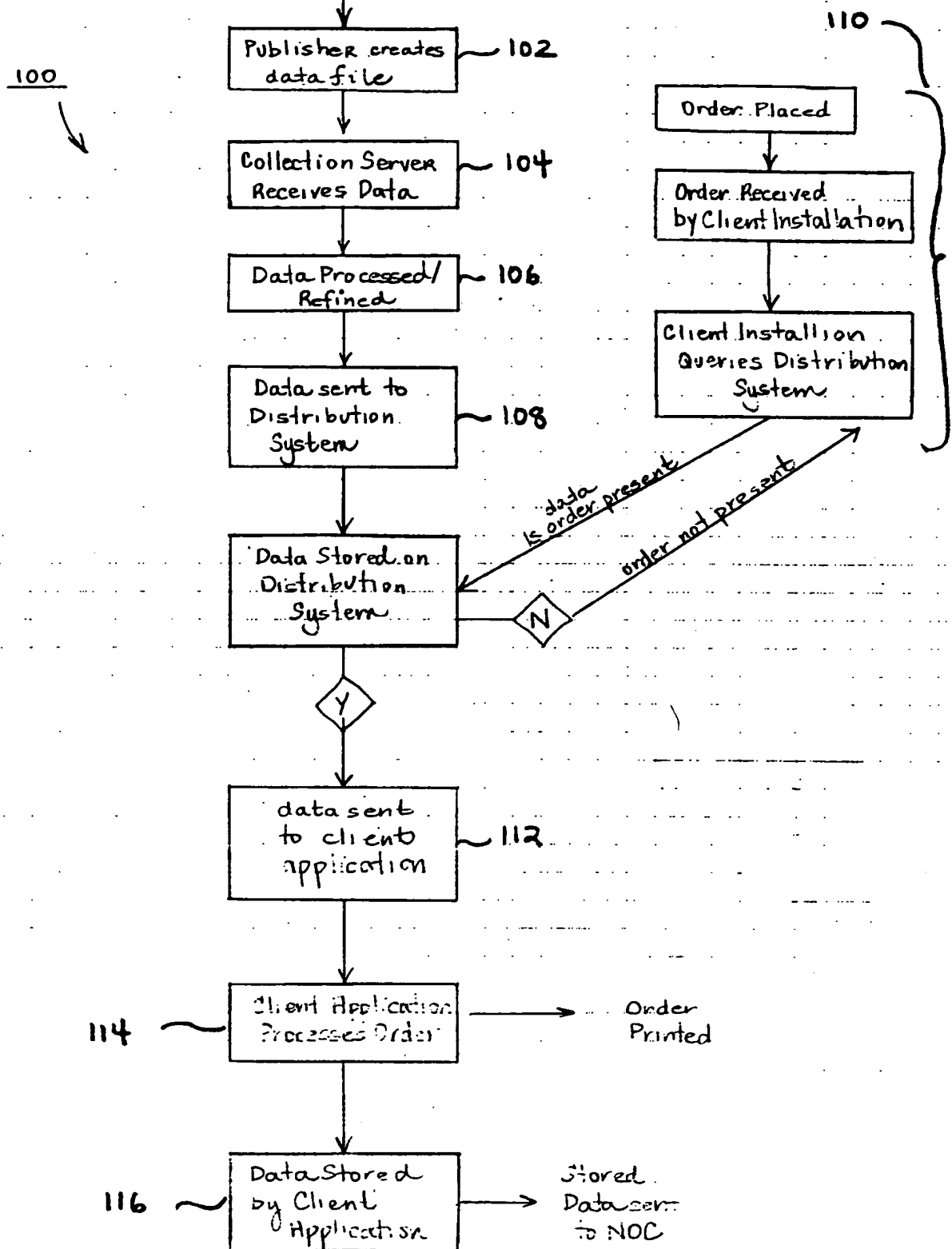
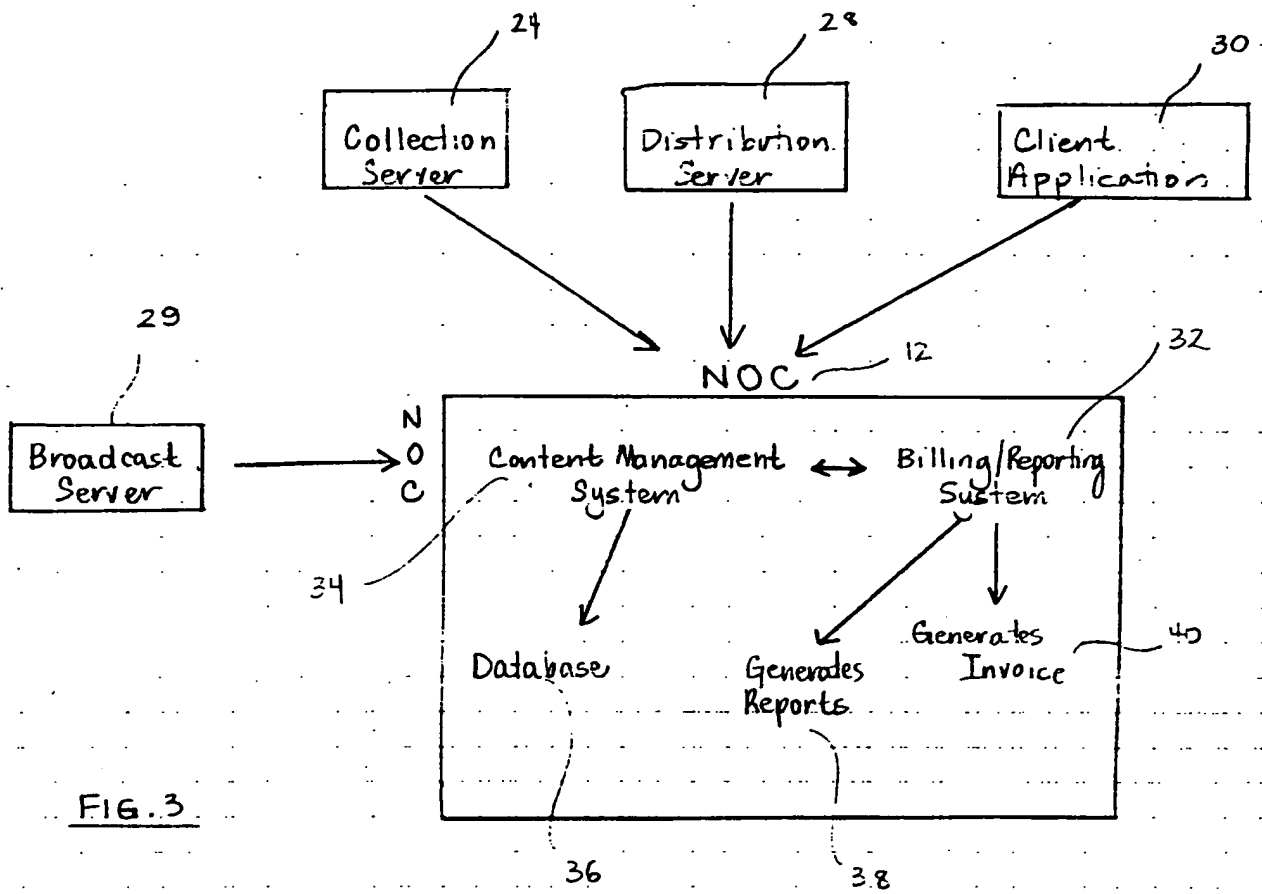


FIG. 1

FIG 2



FIG. 3

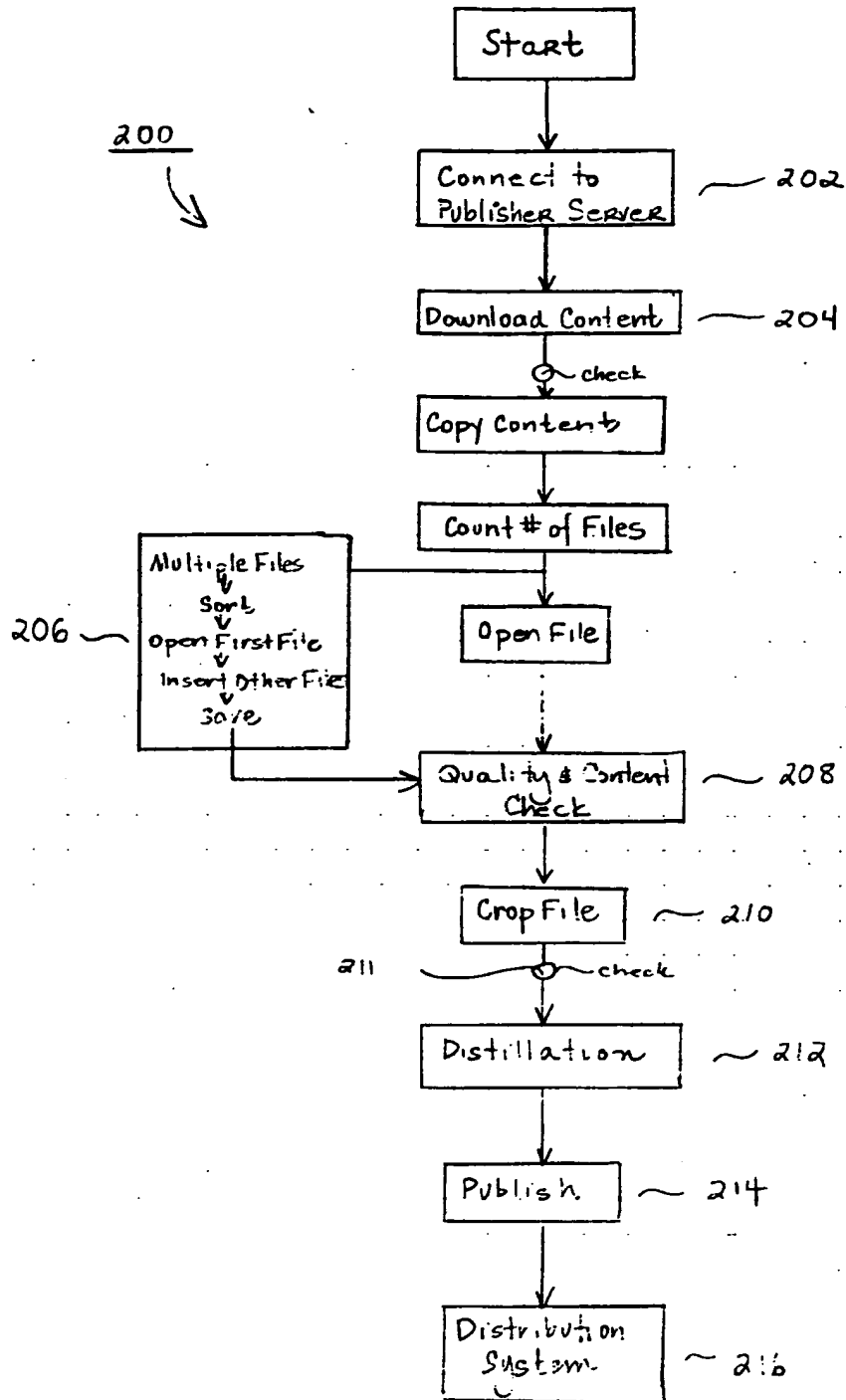
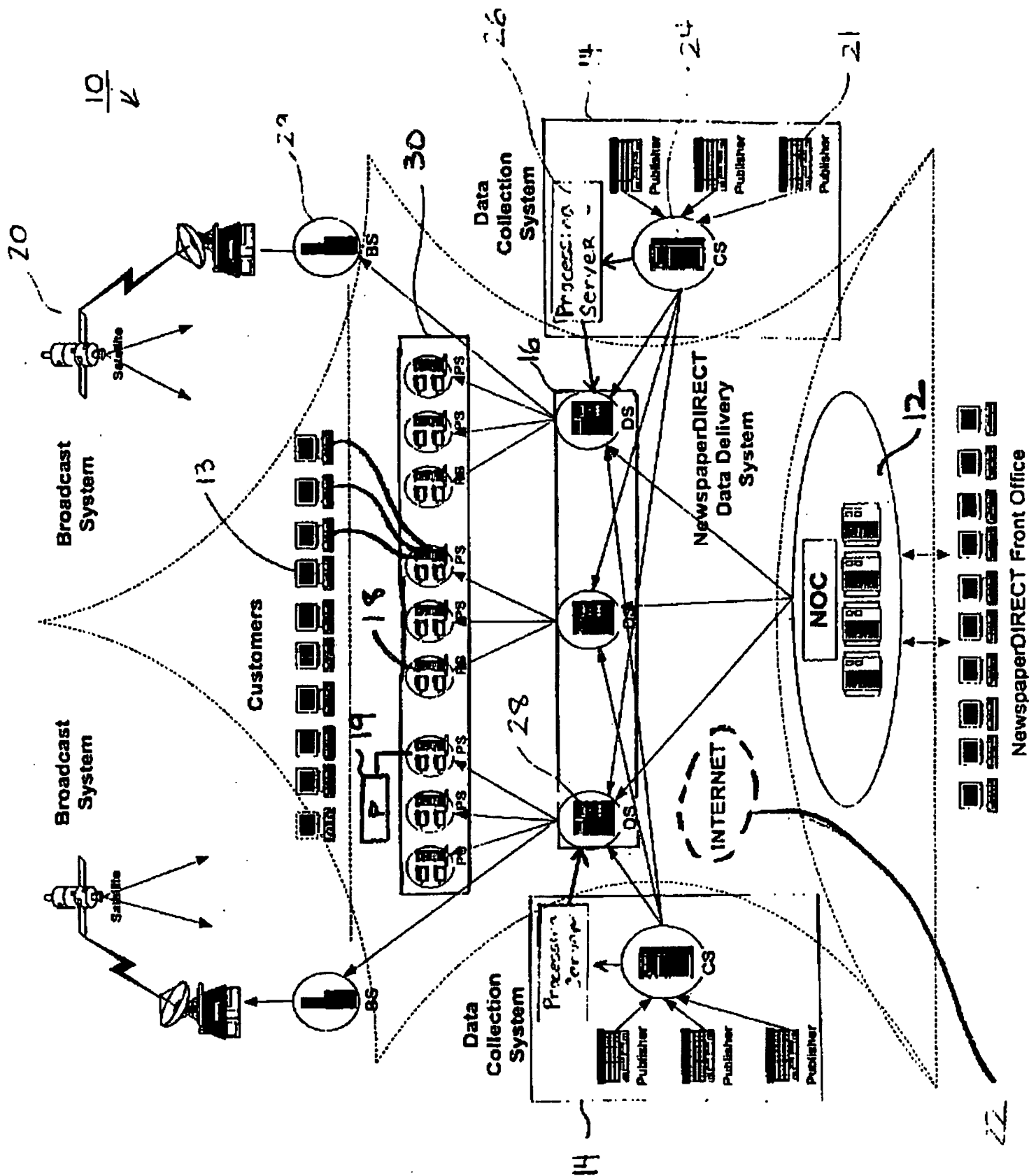


FIGURE 4



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